REMARKS

In view of the above amendments and the following remarks, the Examiner is respectfully requested to withdraw the rejections and allow Claims 22-24 and 27, 28 and 31-48, the only claims pending in this application.

Claims 22, 27, 31 and 34 have been amended to further clarify that the arrays are nucleic acid arrays, i.e., arrays having a plurality of nucleic acids stably associated on a surface of a substrate. Support for these amendments may be found in the specification, e.g., at page 3, lines 14-19.

As no new matter has been added by the above amendments, entry of the above amendments is respectfully requested.

REJECTION UNDER 35 U.S.C. §103(a)

Claims 22, 23, 27, 28,31, 34, 37, 38 and 44 were rejected again under 35 U.S.C. §103(a) as being unpatentable over Milton (US 6,146,833) over Deeg et al. (US 5,338,688). In maintaining this rejection, the Examiner asserts that the term "nucleic acid binding agent" is sufficiently broad to encompass the surface bound functionalities described in Milton.

In response, the claims have been amended to clarify that the arrays onto which the sample is deposited are nucleic acid arrays, that display nucleic acids on their surface. As such, the methods of Claims 22, 23, 27, 28,31, 34, 37, 38 and 44 are directed towards methods of **using a nucleic acid array**, i.e., the subject methods are concerned with using an array whereby fluid is deposited onto the array using a thermal inkjet head. More specifically, as amended, independent Claims 22, 27, 31 and 34 recite that the array surface, onto which a quantity of fluid containing nucleic acid is deposited, **includes a plurality of nucleic acids stably associated with it.**

Thus, the subject methods clearly recite that the surface onto which the fluid is deposited is an array surface, specifically a previously prepared array and more specifically a surface that includes a plurality of nucleic acids stably associated with it. Accordingly, the subject invention is concerned with using arrays in array-based analyte

detection assays and specifically **hybridization** assays between nucleic acid in a fluid sample and an array or rather nucleic acids present on a surface of an array. Moreover, each of the claims also recites that nucleic acids present in the fluid sample deposited onto the array surface according to the subject methods are capable of **hybridizing to their nucleic acids complements**.

Thus, in order for the subject claims to be rendered obvious over Milton in view of Deeg et al., the references must teach or suggest the deposition of fluid containing nucleic acids onto a previously prepared array surface using a thermal inkjet head such that the deposited nucleic acids are capable of hybridizing to their nucleic acids complements.

However, the Applicants respectfully submit that the cited references do not teach or suggest these claim limitations because the references are directed towards the manufacture of arrays and not the use of the arrays, as is claimed in the subject claims.

Specifically, Milton does not teach depositing a quantity of nucleic acid containing fluid onto a substrate surface that includes a plurality of nucleic acids stably associated with it. In fact, the Examiner correctly points to specific passages in Milton for "teaching binding oligonucleotides to support activated with acyl fluoride functionalities (Office Action, page 4). As such, the Examiner acknowledges that Milton teaches a support activated with acyl fluoride functionalities – not a support having a plurality of nucleic acids as claimed in the subject claims.

Thus, Milton teaches reagents and processes for immobilizing biopolymers and biomonomers to a solid support. Generally, Milton et al. teach that these biopolymers and biomonomers are immobilized to the solid support by their interaction with acyl fluoride functionalities present on the surface of the solid support (abstract; col. 3, entirety to col. 4, lines 1-36). Specifically, Milton teaches contacting the acyl fluoride functionalized support with "...a suitably derivitized biopolymer or derivitized biomonomer under conditions which cause the derivitized biomonomer or biopolymer to react with acyl fluoride functionalities" (col. 10, lines 1-4). Thus, Milton teaches the immobilization of a biopolymer or biomonomer to acyl fluoride groups present on a solid support. Milton also

teaches "Processes for immobilizing biopolymers to activated solid support surfaces and directly attaching in a step-wise successive manner biomonomer units to a growing biopolymer chain attached to the solid support." (abstract) Accordingly, nowhere does Milton describe that a thermal inkjet head is utilized to contact a fluid sample with a previously prepared array, i.e., a support having nucleic acids associated with it.

Furthermore, Milton does not even suggest a substrate surface having a plurality of nucleic acids thereon as Milton is concerned with forming and synthesizing immobilized biopolymers on a substrate surface, i.e., manufacturing or making an array, and not with performing hybridization assays using an already prepared array, wherein a fluid containing nucleic acid is contacted with its complementary nucleic aid binding agent present on an array surface to form a binding complex made up of the complementary binding pair. As such, there is no need for the solid support of Milton to have a plurality of nucleic acids thereon, as claimed in the subject claims, because Milton is concerned with making an array and not concerned with complementary binding pairs and more specifically is not concerned with hybridization reactions between nucleic acids on a substrate surface.

Deeg et al. is cited solely for actuating a thermal inkjet head and thus Deeg et al. fail to make up for the deficiencies of Milton et al. In fact, Deeg et al. is not even concerned with utilizing a thermal inkjet to deposit a fluid containing a nucleic acid nor is Deeg et al. concerned with an array substrate having a plurality of nucleic acids stably associated therewith as Deeg et al. is only concerned with deposition of protein agents, e.g., enzymes and antibodies. Accordingly, Deeg et al. does not teach or suggest the use of the disclosed device in conjunction with nucleic acid molecules and in fact nowhere in Deeg et al. is the term "nucleic acid" even employed.

Specifically, analogous to Milton et al., Deeg et al. is directed towards using a jet from a jet unit to **manufacture or make** reagent domains (32) on a band (20) (see for example col. 4, lines 37-46) and not to deposit a fluid sample using a jet unit onto a support that already has nucleic acids thereon as claimed in the subject claims. While Deeg et al. do teach that a sample may be delivered downstream from the jet units of

Deeg et al. by sample metering unit (28) to the reagent domains (32), nowhere is it taught that these sample metering units are jet units and in fact FIG. 2 of Deeg et al. clearly shows these metering units as different from the jet units shown. Likewise, while Deeg et al. do teach that additional reagent metering station (31) enables a further reagent to be metered, as noted above nowhere is it taught or even suggested that this metering station deposits a nucleic acid, let alone nucleic acids that are capable of hybridizing to their nucleic acid complements, where such is claimed in the subject claims.

Accordingly, because the cited references fail to teach or suggest all the claim limitations, a proper *prima facie* case of obviousness under 35 U.S.C. §103(a) cannot be made and the Applicants respectfully request that this rejection be withdrawn.

Claims 24, 32, 33, 35, 36, 39-43 and 45-48 were rejected under 35 U.S.C. §103(a) as being unpatentable over Milton (US 6,146,833) over Deeg et al. (US 5,338,688) in further view of Cornell (US 6,132,030). The Applicants respectfully submit that Claims 24, 32, 33, 35, 36, 39-43 and 45-48 are not unpatentable over Milton and Deeg et al.

As described above, Milton and Deeg et al. do not teach utilizing a thermal inkjet head for the deposition of a quantity of nucleic acid containing fluid onto a substrate surface that has a plurality of nucleic acids stably associated with it. As Cornell is cited solely for teaching the use of specific power requirements in determining the heat power density for ejecting from thermal inkjet, Cornell fails to make up for the deficiencies of Milton and Deeg et al. Accordingly, for reasons analogous to those described above, the Applicants respectfully submit that a proper *prima facie* case of obviousness cannot be made and thus request that this rejection be withdrawn.

CONCLUSION

The applicant respectfully submits that all of the claims are in condition for allowance, which action is requested. If the Examiner finds that a telephone conference would expedite the prosecution of this application, please telephone Gordon Stewart at 650 485 2386. The Commissioner is hereby authorized to charge any fees which may be required by this paper, or to credit any overpayment, to Deposit Account No. 50-1078.

Respectfully submitted,

Date: 7.8.03

By: _____
Bret E. Field
Registration No. 37,620

DATE: July 8, 2003 EV333999588US

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Date of Deposit: **7/8/2003** I hereby certify that the below-listed papers or fees were inserted into a package addressed to: Commissioner for Patents, PO BOX 1450, Alexandria, Virginia 22313-1450 and was deposited by me with the United States Postal Service "Express Mail Post Office Addressee" service under 37 C.F.R. § 1.10 on the date indicated above.

Signature _____ Date 7/8/03

Atty. Docket No.	Serial Number	Description	Atty.	Fee
UCAL-117CON	09/877,745	Transmittal, Amendment	BEF	
RIGL-004CON	09/727,715	Transmittal, Declaration under 1.132, Amendment After Final Rejection	PJS	
LIFE-064	10/100,531	Transmittal, Fee Transmittal *in duplicate,* IDS, SB08A, Copies of (2) Cited References	FPB	$180
LIFE-044	10/100,254	Transmittal, IDS, SB08A, Copy of EP Search dated 05/23/03, Copies of (2) Cited References	FPB	
AGIL-005CON	09/819,923	Request for RCE Transmittal *in duplicate,* Response to Final Rejection	BEF	$740